ABSTRACT OF THE DISCLOSURE

In one aspect, the invention provides methods of identifying genetic mutations that are associated with ataxic neurological disease. The methods comprise identifying a difference between a nucleic acid sequence of a protein kinase C gamma gene from a mammalian subject exhibiting ataxia and a nucleic acid sequence of a protein kinase C gamma gene from a subject which is not exhibiting ataxia, wherein the difference is a genetic mutation associated with ataxic neurological disease. In another aspect, isolated nucleic acid molecules encoding protein kinase C gamma missense mutations are provided. In another aspect, a method of screening a subject to determine if the subject has a genetic predisposition to develop an ataxic neurological disease is provided. In another aspect, the invention provides kits for determining susceptibility or presence of ataxic neurological disease in a mammalian subject.